Lava Beds National Monument

Curriculum Standards

The following curriculum standards for California and Oregon are covered in this activity binder. Each activity states which curriculum standards it relates to at the beginning of the activity.

CALIFORNIA

Grade 3

SCIENCE

Life Sciences:

3. Adaptations in physical structure or behavior may improve an organism's chance for survival. As a basis for understanding this concept:

   a. Students know plants and animals have structures that serve different functions in growth, survival, and reproduction.

   b. Students know examples of diverse life forms in different environments, such as oceans, deserts, tundra, forests, grasslands, and wetlands.

   c. Students know living things cause changes in the environment in which they live: some of these changes are detrimental to the organism or other organisms, and come are beneficial.

   d. Students know when the environment changes, some plants and animals survive and reproduce; others die or move to new locations.

   e. Students know that some kinds of organisms that once lived on Earth have completely disappeared and that some of these resembled others that are alive today.

Investigation and Experimentation

5. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:

   a. Repeat observations in improve accuracy and know that the results of similar scientific investigations seldom turn out exactly the same because of differences in the things being investigated, methods being used, or uncertainty in the observation.

   b. Differentiate evidence from an opinion and know that scientists do not rely on claims or conclusions unless they are backed by observations that can be confirmed.

c. Use numerical data in describing and comparing objects, events, and measurements.

d. Predict the outcome of a simple investigation and compare the result with the prediction.

e. Collect data in an investigation and analyze those data to develop a logical conclusion.

Grade 3
HISTORY / SOCIAL SCIENCE

Continuity and Change

3.1 Students describe the physical and human geography and use maps, tables, graphs, photographs and charts to organize information about people, places, and environments in spatial context.

a. Identify geographical features in their local region (e.g., deserts, mountains, valleys, hills, coastal areas, oceans, lakes)

b. Trace the ways in which people have used the resources of the local region and modified the physical environment (e.g., a dame constructed upstream changed a river or coastline).

3.2 Students describe the American Indian nations in their local region long ago and in recent past

a. Describe national identities, religious beliefs, customs, and various folklore traditions.

b. Discuss the ways in which physical geography, including climate, influenced how the local Indian nations adapted to their natural environment.

3.4 Students understand the role of rules and laws in our daily lives and the basic structure of the U.S. government.

a. Determine the reasons for rules, laws and the U.S. Constitution; the role of citizenship in the promotion of rules and laws; and the consequences for people who violate rules and laws.

Grade 4
SCIENCE

Life Science

2. All organisms need energy and matter to live and grow. As a basis for understanding this concept:

a. Students know plants are the primary source of matter and energy entering most food chains.

3. Living Organisms depend on one another and on their environment for survival. As a basis for understanding this concept:

a. Students know ecosystems can be characterized by their living and nonliving components.

b. Students know that in any particular environment, some kinds of plants and animals survive will, some survive less well, and some cannot survive at all.

c. Students know many plants depend on animals for pollination and seed dispersal, and animals depend on plants for food and shelter.

d. Students know that most microorganisms do not cause disease and that many are beneficial.

Earth Sciences

4. The properties of rocks and minerals reflect the processes that formed them. As a basis for understanding this concept:

a. Students know how to differentiate among igneous, sedimentary, and metamorphic rocks by referring to their properties and methods of formation (the rock cycle).

b. Students know how to identify common rock-forming minerals (including quartz, calcite, feldspar, mica, and hornblende) and ore minerals by using a table of diagnostic properties.

5. Waves, wind, water and ice shape and reshape Earth's land surface. As a basis for understanding this concept:

a. Students know some changes in the earth are due to slow processes, such as erosion, and some changes are due to rapid processes, such as landslides, volcanic eruptions, and earthquakes.

b. Students know natural processes, including freezing and thawing and growth of roots, cause rocks to break down into smaller pieces.

Investigation and Experimentation

6. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:

a. Differentiate observation form inference (interpretation) and know scientists' explanations come partly from what they observe and partly from how they interpret their observations.

b. Measure and estimate the weight, length, or volume of objects.

c. Formulate and justify predictions based on cause-and effect relationships.

d. Conduct multiple trials to test a prediction and draw conclusions about the relationships between predictions and results.

e. Construct and interpret graphs from measurements.

f. Follow a set of written instruction for a scientific investigation.

Visual Art

3.0 HISTORICAL AND CULTURAL CONTEXT Understanding the Historical Contributions and Cultural Dimensions of the Visual Arts Students analyze the role and development of the visual arts in past and present cultures throughout the world, noting human diversity as it relates to the visual arts and artists.

Role and Development of the Visual Arts

3.1 Describe how art plays a role in reflecting life (e.g., in *Diversity of the Visual Arts)*

3.2 Identify and discuss the content of works of art in the past and present, focusing on the different cultures that have contributed to California's history and art heritage.

3.3 Research and describe the influence of religious groups on art and architecture, focusing primarily on buildings in California both past and present.

Grade 5

SCIENCE

Life Sciences

2. Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials.

a. Students know many multicellular organisms have specialized structures to support the transport of materials.

Investigation and Experimentation

6. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:

a. Classify objects (e.g., rocks, plants, leaves) in accordance with appropriate criteria.

b. Develop a testable question.

c. Plan and conduct and simple investigation based on a student-developed question and write instructions others can follow to carry out the procedure.

d. Identify the dependent and controlled variables in an investigation.

e. Identify a single independent variable in a scientific investigation and explain how this variable can be used to collect information to answer a question about the results of the experiment.

f. Select appropriate tools (e.g., thermometers, meter sticks, balances, and graduated cylinders) and make quantitative observations.

g. Record data by using appropriate graphic representations (including charts, graph, and labeled diagrams) and make inferences based on those data.

h. Draw conclusions from scientific evidence and indicate whether further information is needed to support a specific conclusion.

i. Write a report of an investigation that includes conduction tests, collecting data or examining evidence, and drawing conclusions.

Writing

1.0 Writing Strategies

Students write clear, coherent, and focused essays. The writing exhibits the students' awareness of the audience and purpose. Essays contain formal introductions, supporting evidence, and conclusions. Students progress through the stages of the writing process as needed.

Grade 6

SCIENCE

Investigation and Experimentation

7. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:

a. Develop a hypothesis.

b. Select and use appropriate tools and technology (including calculators, computers, balances, spring scales, microscopes, and binoculars) to perform test, collect data and display data.

c. Construct appropriate graphs from data and develop qualitative statements about the relationships between variables.

d. Communicate the steps and results from an investigation in written reports and oral presentations.

e. Recognize whether evidence is consistent with a proposed explanation.

OREGON

Benchmark 1

Benchmark 1 (Grades K-3) students study physical properties and changes in matter, an object's position and how to affect its movement, and learn to identify common types and uses of energy. They study characteristics that are similar and different between organisms and the basic needs of living things. Students learn to describe a habitat and the organisms that live there and to identify how some animals gather and store food, defend themselves, and find shelter. Students study physical differences in Earth materials, daily and seasonal weather changes, and the movement of objects in the sky. Students also study the basic concepts of Scientific Inquiry. They make observations, ask questions or form hypotheses which can be explored through simple investigations, plan a simple investigation, collect data from an investigation, and use the data collected from an investigation to explain the results.

Benchmark 2

Benchmark 2 (Grades 4-5) students learn to identify different states of matter and the causes of change in states, to describe and compare the motion of objects, to identify examples of forces on objects and forms of various types of energy and their effects on matter, and to describe examples of energy transfer. Life science study includes grouping or classifying organisms based on a variety of characteristics and studying the function of organ systems and basic plant and animal structures. They study the life cycle of an organism, the relationship between characteristics of specific habitats and the organisms that live there, and how adaptations help a species survive. Students learn to identify properties and uses of Earth materials, patterns of seasonal weather and causes of Earth surface changes. They use pictorial models to describe the Earth's place in the solar system and the patterns of movement of objects within the solar system. Students extend their work with Scientific Inquiry, designing and conducting simple investigations to answer questions or test hypotheses, and collecting, organizing, summarizing, analyzing, and interpreting data from investigations.

Grade 3

SCIENCE

Life Science

CCG: Organisms: Understand the characteristics, structure and function of organisms.

SC.03.LS.01

Recognize characteristics that are similar and different between organisms.

CCG: Heredity: Understand the transmission of traits in living things.

SC.03.LS.03

Describe how related plants and animals have similar characteristics.

CCG: Diversity/Interdependence: **Understand the relationships among living things and between living things and tier environment.**

SC.03.LS.04
Describe a habitat and the organisms that live there.

SC.03.LS.05
Identify how some animals gather and store food, defend themselves, and find shelter.

Scientific Inquiry

CCG: Forming the Question/Hypothesis: Formulate and express scientific questions or hypotheses to be investigated.

SC.03.SI.01
Make observations. Based on these observations, ask questions or form hypotheses, which can be explored through simple investigations.

CCG: Designing the Investigation: Design safe and ethical scientific investigations to address questions or hypotheses.

SC.03.SI.02
Plan a simple investigation.

CCG: Collecting and Presenting Data: Conduct procedures to collect, organize and display scientific data.

SC.03.SI.03
Collect data from an investigation.

CCG: Analyzing Data and Interpreting Results: Analyze scientific information to develop and present conclusions.

SC.03.SI.04
Use the data collected from an investigation to explain the results.

Grade 5
SCIENCE

Life Science

CCG: Organisms: Understand the characteristics, structure and function of organisms.

SC.05.LS.01
Group or classify organisms based on a variety of characteristics.
SC.05.LS.03
Describe basic plant and animal structures and their functions.
SC.05.LS. 03.01
Associate specific structures with their functions in he survival of the organism.

CCG: Diversity/Interdependence: **Understand the relationships among living things and between living things and tier environment.**

SC.05.LS.05
Describe the relationship between characteristics of specific habitats and the organisms that live there.
SC.05.LS.05.05
Describe the living and nonliving resources in a specific habitat and the adaptations of organisms to that habitat.
SC.05.LS.06
Describe how adaptations help a species survive.
SC.05.LS.06.01
Describe changes to the environment that have caused the population of some species to change.
SC.05.LS.06.02
Identify conditions that might cause a species to become endangered or extinct.

Earth and Space Science

CCG: The Dynamic Earth: Understand changes occurring within the lithosphere, hydrosphere, and atmosphere of the Earth.

SC.05.ES.03.02
Identify effects of rapid changes on Earth's surface features including earthquakes and volcanoes.

Scientific Inquiry

CCG: Forming the Question/Hypothesis: Formulate and express scientific questions or hypotheses to be investigated.

SC.03.SI.01
Make observations. Ask questions or form hypotheses basked on these observations, which can be explored through simple investigations.

CCG: Designing the Investigation: Design safe and ethical scientific investigations to address questions or hypotheses.

SC.05.SI.02
Design a simple scientific investigation to answer questions or test hypotheses.

CCG: Collecting and Presenting Data: Conduct procedures to collect, organize and display scientific data.
SC.05.SI.03
Collect, organize, and summarize data from an investigation.

CCG: Analyzing Data and Interpreting Results: Analyze scientific information to develop and present conclusions.

SC.05.SI.04
Summarize, analyze, and interpret data from investigations.

Grade 8
SCIENCE

Earth and Space Science

CCG: The Dynamic Earth: Understand changes occurring within the lithosphere, hydrosphere, and atmosphere of the Earth.

SC.08.ES.03.04
Give examples of landform changes that occur at different rates.

SC.08.ES.03.05
Describe the evidence for and the development of the theory of plate tectonics.

SC.08.ES.03.06
Explain the rock cycle in terms of constructive (crustal deformation, volcanic eruption, and sediment deposition) and destructive (weathering and erosion) forces in land formation.

Grade 3
SOCIAL SCIENCES

Geography

CCG: Understanding how people and the environment are interrelated.

SS.03.GE.05
Understand how peoples' lives are affected by the physical environment

Grade 5
SOCIAL SCIENCES

Geography

CCG: Understanding how people and the environment are interrelated.

SS.05.GE.07
Understand how physical environment are affected by human activities.

SS.05.GE.07.01
Understand how and why people alter the physical environment.

SS.05.GE.07.02
Describe how human activity can impact the environment.

SS.05.GE.08
Understand how human activities are affected by the physical environment

Grade 8
SOCIAL SCIENCES

Geography

CCG: Understanding how people and the environment are interrelated.

SS.08.GE.08.02
Understand how climatic events or climate change affect human activity.

SS.08.GE.08.03
Predict how changes in an ecosystem (not caused by human activity) might influence human activity.

Grade 3
ART

Historical and Cultural Perspectives

CCG: Understand how events and conditions influence the arts.

AR.03.HC.01
Identify an event or condition that influenced a work of art.

CCG: Distinguish works of art from different societies, time periods and cultures.

AR.03.HC.02
Identify social, historical and cultural characteristics in a work of art.

CCG: Understand how the arts can reflect the environment and personal experiences within a society or culture, and apply to one's own work.

AR.03.HC.03
Describe how art from the student's community reflects the artist's environment and culture.

CCG: Understand the place of the arts within, and their influences on, society.

AR.03.HC.04
Describe how the arts serve a variety of purposes in the student's life, community and culture.

AR.03.HC.05
Recognize how the arts can influence an individual's life.

Grade 5
ART

Historical and Cultural Perspectives

CCG: Understand how events and conditions influence the arts.

AR.05.HC.01
Identify and describe the influence of events and/or conditions on works of art.

CCG: Distinguish works of art from different societies, time periods and cultures.

AR.05.HC.02
Identify and relate common and unique characteristics in works of art that reflect social, historical, and cultural contexts.

CCG: Understand how the arts can reflect the environment and personal experiences within a society or culture, and apply to one's own work.

AR.05.HC.03
Describe how works of art from various historic periods reflect the artist's environment, society and culture.

CCG: Understand the place of the arts within, and their influences on, society.

AR.05.HC.04
Describe how the arts serve a variety of purposes and needs in other communities and cultures.

AR.05.HC.05
Describe how the arts have influenced various communities and cultures.

Grade 8
ART

Historical and Cultural Perspectives

CCG: Understand how events and conditions influence the arts.

AR.08.HC.01
Distinguish the influence of events and conditions on works of art.

CCG: Distinguish works of art from different societies, time periods and cultures.

AR.08.HC.02
Identify and relate works of art from different societies, time periods and cultures, emphasizing their common and unique characteristics.

CCG: Understand how the arts can reflect the environment and personal experiences within a society or culture, and apply to one's own work.

AR.08.HC.03
Explain how works of art from around the world reflect the artist's environment, society and culture.

CCG: Understand the place of the arts within, and their influences on, society.

AR.08.HC.04
Explain how the arts serve a variety of purposes, needs and values in different communities and cultures.

AR.08.HC.05

Explain the influence of the arts on individuals, communities and cultures in various time periods.